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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/830,030	04/20/2001	Yukihito Ichikawa	WATK:211	9377

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EXAMINER	
TRAN, HIEN THI	

ART UNIT	PAPER NUMBER
1764	

DATE MAILED: 07/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/830,030	ICHIKAWA ET AL.	
	Examiner	Art Unit	
	Hien Tran	1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 April 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-32 and 34* is/are pending in the application.

4a) Of the above claim(s) *12-15,19-32 and 34* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-11,16-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) *1,3-32 and 34* are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *4/20/01* is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: "60" (Fig. 23). Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference characters "58" (page 58, line 20) and "59" (page 60, line 14) have both been used to designate the "fuel". Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the

applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

3. The drawings have not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the drawings to comply with CFR 1.84(p)(5), e.g. they should include the reference sign(s) mentioned in the specification and vice versa.

Specification

4. The disclosure is objected to because of the following informalities:

On page 7, lines 5-6 it is unclear as to what is intended by "wall deformation (sine wave) deformations".

On page 39, lines 8-22 it is unclear as to what applicants are attempting to recite, which 14 cells, or 10 cells or 4 cells are implied.

On paragraph bridging pages 40-41, "black hole" should be changed to --back hole--.

Appropriate correction is required.

5. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 3, 8-9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 3, lines 2-3 it is unclear as to how the flat wall face portions are related to undulated wall face portions set forth in claim 1 (note that claim 1 recites that each cell passage is defined by the opposed undulated wall face portions). The claim appears to be in conflict with claim 1. See claim 8 likewise.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1, 3, 6-10 and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 05-123580.

With respect to claims 1, 7, JP 05-123580 discloses an undulated-wall honeycomb structure having a plurality of cell passages defining a cell passage direction, which are mutually parallel in the cell passage direction; wherein intersection portions between walls defining said cell passages have a predetermined pitch in cross-sections perpendicular to said cell passages and are located in a pattern and wherein the wall face portions of said walls excluding said intersection portions have an undulated shape in both the cell passage direction and the cross-sectional direction perpendicular to said cell passage direction (abstract, Figs. 1-3).

With respect to claims 3, 8, JP 05-123580 discloses that the wall face portions including portions having an undulated shape and flat shape (note section 0022, Figs. 2a, 2b).

With respect to claim 6, JP 05-123580 shows that the amplitude of the undulated wall appears to be at least 150% the thickness of the wall (see, for example, Figs. 1-2).

With respect to claim 9, JP 05-123580 discloses that the honeycomb structure has a center portion surrounded by an outer portion, the center portion comprising cell passages defined by undulated wall face portions; the outer portion comprising cell passages defined by flat wall face portions, the thickness of the wall 3 of the cell passages at the outer portion is greater than that of the wall 4 of the cell passages at the center portion (sections 0019, 0021).

With respect to claim 10, JP 05-123580 discloses that the honeycomb structure is made from activated carbon (section 0032).

With respect to claim 16, JP 05-123580 discloses that the honeycomb structure has an undulated surface for increasing the surface area, and carries a catalyst on the surface thereof for purifying exhaust gas. Placing the honeycomb structure in a housing is inherent therein. (See, for example, abstract, section 0001).

Instant claims 1, 3, 6-10 and 16 structurally read on the apparatus of JP 05-123580.

10. Claims 1, 4, 7 and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 61-68141.

With respect to claims 1, 4, 7, JP 61-68141 discloses an undulated-wall honeycomb structure having a plurality of cell passages defining a cell passage direction, which are mutually parallel in the cell passage direction; wherein intersection portions between walls defining said cell passages have a predetermined pitch in cross-sections perpendicular to said cell passages and

are located in a pattern and wherein the wall face portions of said walls excluding said intersection portions have an undulated shape in both the cell passage direction and the cross-sectional direction perpendicular to said cell passage direction (abstract, Figs. 2, 4).

With respect to claim 16, JP 61-68141 discloses that the honeycomb structure has an undulated surface for increasing the surface area, and carries a catalyst on the surface thereof for purifying exhaust gas. Placing the honeycomb structure in a housing is inherent therein. Since the translation of the JP 61-68141 is not available at this time, the rejection is based on the abstract and drawings thereof. However, when the translation of the JP '141 becomes available in the future, further rejection based on JP '141 may be appropriate.

Instant claims 1, 4, 7, and 16 structurally read on the apparatus of JP 61-68141.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

12. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

13. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP 61-68141 in view of GB 2,071,640 and Maus et al (WO 96/12876 corresponding to US 6,274,099).

The apparatus of JP 61-68141 is substantially the same as that of the instant claim, but fails to teach whether the deformation is greater at the outer portion that at the center portion.

GB '640 discloses provision of a honeycomb structure having the channels in the outer region clogged for improving the thermal insulation.

Maus et al discloses provision of a honeycomb structure having deformation at the outer region to close channels in the peripheral region for improving the thermal insulation.

It would have been obvious to one having ordinary skill in the art to construct the honeycomb structure of JP 61-68141 so as the deformation at the outer region is greater than that at the center region so as to improve the thermal insulation of the structure as taught by GB '640 and Maus et al.

14. Claims 6, 10, 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 61-68141 in view of JP 10-059784.

With respect to claim 6, the honeycomb structure of JP 61-68141 is substantially the same as that of the instant claims, but is silent as to the specific amplitude of the undulated walls.

However, JP 10-059784 shows provision of an undulated-wall honeycomb structure having a plurality of cell passages wherein the wall face portions of said walls of said cell passages have an undulated shape, the amplitude of the undulated wall appears to be at least 150% the thickness of the wall (see, for example, Fig. 1).

It would have been obvious to one having ordinary skill in the art to select an appropriate amplitude for the undulated walls, such as the one taught by JP 10-059784 in the apparatus of JP

61-68141, to obtain the desired purification thereof on the basis of its suitability for the intended use as a matter of obvious design choice, and since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art (*In re Aller*, 105 USPQ 233).

With respect to claim 10, the honeycomb structure of JP 61-68141 is substantially the same as that of the instant claims, but is silent as to the specific material of the honeycomb structure.

However, JP 10-059784 shows provision of an undulated-wall honeycomb structure made of ceramic material, such cordierite, mullite, etc. (see, for example, abstract).

It would have been obvious to one having ordinary skill in the art to select an appropriate material for the honeycomb structure, such as the one taught by JP 10-059784 in the apparatus of JP 61-68141, on the basis of its suitability for the intended use as a matter of obvious design choice as use of such material is conventional in the art and no cause for patentability here.

With respect to claim 18, the honeycomb structure of JP 61-68141 is substantially the same as that of the instant claims, but is silent as to the specific cell density.

However, JP 10-059784 shows provision of an undulated-wall honeycomb structure having a plurality of cell passages wherein the cell density is normally 280 cpsi (see, for example, abstract).

It would have been obvious to one having ordinary skill in the art to select an appropriate cell density for the honeycomb structure, such as the one taught by JP 10-059784 in the apparatus of JP 61-68141, to obtain the desired purification thereof on the basis of its suitability for the intended use as a matter of obvious design choice, and since it has been held that where

the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art (*In re Aller*, 105 USPQ 233).

15. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable JP 05-123580 in view of JP 10-059784.

The same comments with respect to JP 10-059784 apply.

16. Claims 11, 17 are rejected under 35 U.S.C. 103(a) as being unpatentable either JP 05-123580 or (JP 61-68141 in view of JP 10-059784) as applied to claims 10, 16 above and further in view of Abe et al (5,459,119).

The apparatus of either JP 05-123580 or JP 61-68141 as modified by JP 10-059784 is substantially the same as that of the instant claims, but is silent as to the specific wall thickness and porosity.

However, Abe et al discloses the conventionality of providing a honeycomb structure having the wall thickness and porosity as claimed in the instant claims.

The specific wall thickness and porosity of the honeycomb structure are not considered to confer patentability to the claim. The precise wall thickness and porosity of the honeycomb structure would have been considered a result effective variable by one having ordinary skill in the art. As such, without more, the claimed wall thickness and porosity of the honeycomb structure cannot be considered "critical". Accordingly, one having ordinary skill in the art would have routinely optimized the wall thickness and porosity of the honeycomb structure to obtain the desired purification thereof as evidenced by Abe et al (*In re Boesch*, 617 F.2d. 272, 205 USPQ 215 (CCPA 1980)), and since it has been held that where the general conditions of a claim

are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art (*In re Aller*, 105 USPQ 233).

Response to Arguments

17. Applicant's arguments filed 4/26/05 have been fully considered but they are not persuasive.

Applicants argue that there is no description in JP '580 regarding the position at which the intersection portions are formed; the pitches of the dies in JP '580 are constant and therefore the intersection portions in the honeycomb structure would not be formed at random or irregularly. Such contention is not persuasive as Figs. 1-3 of JP '580 show the cell passages with intersections between walls. With respect to applicants' argument regarding the pitches of the dies or the random/irregular intersections are noted. However, the instant claims do not require any irregular intersections and therefore they are not commensurate in scope with such arguments.

Applicants argue that JP '141 has no teaching regarding a synchronization in the relation between the shapes of the waved walls disposed adjacent to each other in the longitudinal direction of the honeycomb structure. Such contention is persuasive since as set forth above the language of the claims is not commensurate in scope with such argument. In any event, Fig. 2 of JP '141 shows provision of the cell passages having undulated shaped wall face portions in both the cell passage or longitudinal direction and the cross-sectional direction and the recessions and/or protrusions on wall face portions are facing one another.

Applicants argue that in JP '784 there is no waved shape in the longitudinal direction. Such contention is not persuasive as JP '784 is relied upon for teaching the specific amplitude of

the undulated wall, the specific material of the honeycomb structure and the specific cell density. Whether the JP '784 does not disclose waved shape in the longitudinal direction is irrelevant as the primary reference is relied upon for such teaching.

Conclusion

18. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hien Tran whose telephone number is (571) 272-1454. The examiner can normally be reached on Tuesday-Friday from 7:30AM-6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Hien Tran

Hien Tran
Primary Examiner
Art Unit 1764

HT